to radiographic weather reports from ships off the west coast of Mexico their source has been determined. Even so the problem of forecasting them is fraught with difficulty due to the inadequacy of observational material from the Mexican mainland. If observations from a denser meteorological net covering the states of Baja California, Sonora and Sinaloa, were available, the difficulty would be substantially reduced. (Examples: September 18–19, 1929; September 29–October 1, 1931.)

THE REMARKABLY HEAVY PRECIPITATION AT HENDERSON LAKE, VANCOUVER ISLAND, BRITISH COLUMBIA

By F. NAPIER DENISON

Henderson Lake is situated on the west coast of Vancouver Island, a short distance from Barkley Sound, and at the western entrance of the Alberni Canal, which is a natural channel almost cutting this island in two.

This lake is 20 miles in length and from one-half to a mile in width and lies in a northwest to southeast direction. The rain gage is installed at the Dominion Fish Hatchery at the north end, and is close to a high mountain situated to the north and east of the station.

Though our records show an average annual precipitation on the west coast of this island of over 100 inches, it is interesting to note that at Henderson Lake, which is situated a little more inland, the average annual precipitation during the past eight years was about 250 inches.

The general heavy precipitation on the west coast is naturally much greater at the north end of Henderson Lake owing to its close proximity to a high mountain.

These precipitation observations were started in January, 1923, and in order to show to what extent they exceeded the rainfall at a normal west coast site in the same vicinity, the annual precipitation is shown below for Clayoquot and Henderson Lake for the past eight years.

Annual precipitation

Year	Clayoquot	Henderson Lake	Difference
	Inches	*Inches*	*Inches*
1923	103.32	228.31	124.99
1924	100.30	280.78	180.48
1925	104.21	256.43	152.22
1926	96.25	283.59	187.34
1927	73.59	272.03	198.44
1928	86.57	281.44	194.87
1929	58.19	192.93	134.74
1930	74.09	214.92	139.83
Average for 8 years	87.06	251.30	164.24

From the above figures it will be noted that there is a difference of 164 inches between these stations. Although the precipitation at Henderson Lake was above 280 inches upon three of these years, we must bear in mind that this period is part of a very dry cycle on this coast, as is evident from the fact that the Clayoquot records, which extend back to 1901, show 149 inches in that year and 147 inches in 1902, and from that date to 1911 an almost steady decrease to a minimum of 92 inches. There was then a rise to 1914, from which date to 1921 the yearly average rainfall was 124 inches.

From these Clayoquot figures it would appear that during the past wet periods on the west coast the precipitation at Henderson Lake must have exceeded 300 inches, and that it is probably the wettest recording station on this continent.

The following shorter period falls as derived from the Henderson Lake records are also of interest: The heaviest daily fall was 16.61 inches on December 30, 1926. The heaviest monthly fall was 79.45 inches in December, 1923. The heaviest fall in two consecutive months was 131.98 inches in December, 1923, and January, 1924.

During the first four months of 1931 the total precipitation at Henderson Lake was 154.89 inches.

SNOW ROLLERS

By CHARLES D. REED

[Weather Bureau office, Des Moines, Iowa, January 14, 1933]

"Snow rollers" formed during the night of January 26, 1932, in west central Iowa and were reported from Bagley, Coon Rapids, Stanhope, Laurens, and numerous other localities in southern and western Greene County.

They are balls or rolls of snow formed by the wind, ranging in size from eggs to small barrels, and of such loose and fluffy material that they fall to pieces when one attempts to pick them up. In some way the wind starts a small mass of moist snow rolling along over the snow-covered ground. This mass, at first roughly spherical, gains by accretion of other snow and, if the wind is sufficiently strong, soon acquires the form and size of a lady's muff. The ends usually are hollowed out funnel shaped and sometimes a hole extends clear through lengthwise, though small at the center. From the point of origin to the finished roller there is a distinct and widening track of snow depletion 20 to 100 feet long. From the hilly country south of Coon Rapids some rollers were reported as large as barrels, but, for the most part, the larger ones were somewhat smaller than that. These made "many pastures and fields look as if a host of fairies had rolled thousands of big snowballs during the night." Near Laurens "the balls piled up in places so that a man could not walk among them."

In most of the area where these snow rollers formed there was at sunset of January 25 a hard crust or deposit of old snow ranging from 1 to 20 inches in depth. Moist snow or snow and rain fell during the night, with the surface temperature slightly above the freezing point. The snow continued on the 26th until about 4 or 5 p. m. and amounted to from 2 to 4 inches. At 7 a. m. (ninetieth meridian time), January 26, the barometric center of a storm was between North Platte, Nebr., and Goodland, Kans., but it moved rapidly northeastward and passed, between noon and 2 p. m., directly over the area where the snow rollers formed. It was attended by moderate shifting winds, mostly from the southeast through south to west, during the early part of the night of the 26th–27th and to northwest with increasing strength during the early morning of the 27th. The rollers formed while the wind was from the west and the temperatures were falling rapidly, 17° to 23°, and reaching 1° to 15° above zero Fahrenheit by the morning of the 27th.

This phenomenon has been observed, though but rarely, in many of the Northern States. It may escape notice in and near towns where it could be mistaken for the work of children. Photographs of snow rollers at Canton, N. Y., were published in the Monthly Weather Review, February, 1907, volume 35, page 71; also in the issue for July, 1906, volume 34, pages 325–326. Brief accounts appear also in the December, 1895, number, volume 23, page 465; January, 1898, volume 26, page 20; March, 1899, volume 27, page 100.

Upper: Snow rollers of all sizes from eggs to barrels. Center: Snow rollers, some conical. Bottom: Large snow roller with hollowed end. All photographs 1 mile west of Scranton, Iowa, by A. E. Adams